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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s): Ramesh Nagarajan
Case: 12
Serial No.: 09/587,892
Filing Date: June 6, 2000
Group: 2665
Examiner: Toan D. Nguyen

I hereby certify that this paper is being deposited on this date with the U.S. Postal Service as first class mail addressed to the Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

Signature: _____ Date: October 19, 2005

Title: Efficient Architectures for Protection Against Network Failures

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APPEAL BRIEF

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Applicant hereby appeals the final rejection dated May 17, 2005 of claims 1-19 of the above-identified application.

REAL PARTY IN INTEREST

The present application is assigned to Lucent Technologies Inc., as evidenced by an assignment recorded June 6, 2000 in the U.S. Patent and Trademark Office at Reel 010860, Frame 0425. The assignee Lucent Technologies Inc. is the real party in interest.

RELATED APPEALS AND INTERFERENCES

There are no known related appeals or interferences.

STATUS OF CLAIMS

The present application was filed on June 6, 2000 with claims 1-19. Claims 1-19 are currently pending in the application. Claims 1, 10 and 19 are the independent claims.

Each of claims 1-19 stands rejected under 35 U.S.C. §103(a). Claims 1-19 are appealed.

STATUS OF AMENDMENTS

There have been no amendments filed subsequent to the final rejection.

SUMMARY OF CLAIMED SUBJECT MATTER

Independent claim 1 is directed to a method of routing traffic between elements of a network so as to provide protection against network failures. The method includes the steps of routing a given traffic demand from a first network element to a second network element, and processing the traffic demand in the second network element such that a copy of a signal associated with the demand is at least one of: (i) retained at the second network element, while the signal is routed to at least one additional network element; and (ii) routed to at least one additional network element, while the signal is routed to at least one network element other than the additional network element. The claim further specifies that the second network element is coupled to a first dual-homed network element of a set of dual-homed network elements, either directly or via a given network element corresponding to said at least one network element other than the additional network element, and that a given network element corresponding to said at least one additional network element is coupled to a second dual-homed network element of the set of dual-homed network elements, either directly or via another additional network element.

Independent claim 10 is an apparatus version of claim 1, directed to a given network element.

Independent claim 19 is another apparatus version of claim 1, directed to first and second network elements.

Examples of illustrative embodiments of the claimed invention may be seen in the dual-homing approaches of FIGS. 2, 3, 7 and 8 of the drawings.

As a more particular illustration, FIG. 2 shows an arrangement in which the "second network element" of claim 1 may correspond to network element 15-2, which in this embodiment is directly coupled to a dual-homed network element 16-2 in a set 16 of dual-homed network elements. At

element 15-2, a copy of a signal from NE-A is dropped, and the signal continues on to element 15-3. Element 15-3 in this example may be viewed as the "given network element corresponding to said at least one additional network element" and is directly coupled to a second dual-homed network element of the set of dual-homed network elements 16, namely, dual-homed network element 16-1. See the specification at, for example, page 5, lines 11-21.

The claims similarly cover the multi-ring dual-homing approach of FIG. 3, the dual-homing approach with mesh-type transport and a multidrop mechanism as in FIG. 7, the dual-homing approach with mesh-type transport and a multicast mechanism as in FIG. 8, as well as other arrangements.

Advantageously, the illustrative embodiments provide significant advantages relative to conventional dual-homed architectures. For example, a given embodiment can provide improved protection against network failures while requiring less additional capacity than a conventional dual-homing approach. In addition, such an embodiment ensures that a link failure will not force a switch between a primary dual-homed element and a secondary dual-homed element. A reduction in complexity is also provided relative to conventional dual-homed architectures. See the specification at, for example, page 2, line 14, to page 3, line 4, and page 3, lines 22-27.

GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Claims 1-19 stand rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 5,781,535 (hereinafter "Russ") in view of U.S. Patent No. 5,886,801 (hereinafter "Van Deventer").

ARGUMENT

Claims 1-7 and 10-19

A proper *prima facie* case of obviousness requires that the cited references when combined must "teach or suggest all the claim limitations," and that there be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to combine the references or to modify the reference teachings. See Manual of Patent Examining Procedure (MPEP), Eighth Edition, August 2001, §706.02(j).

Applicant submits that the Examiner has failed to establish a proper *prima facie* case of obviousness in the present §103(a) rejection of independent claims 1, 10 and 19, in that the Russ and Van Deventer references, even if assumed to be combinable, fail to teach or suggest all the claim limitations, and in that no cogent motivation has been identified for combining the references or for modifying the reference teachings to reach the claimed invention. Further, even if it is assumed that a proper *prima facie* case has been established, there are particular teachings in one or more of the references which controvert the obviousness argument put forth by the Examiner.

As was described previously herein, independent claim 1 recites that certain network elements are coupled, either directly or via other network elements, to respective first and second dual-homed network elements of a set of dual-homed network elements. More specifically, with reference to a given traffic demand which is routed from a first network element to a second network element, the claim recites that the second network element is coupled to a first dual-homed network element of a set of dual-homed network elements, either directly or via a given network element corresponding to said at least one network element other than the additional network element, and that a given network element corresponding to said at least one additional network element is coupled to a second dual-homed network element of the set of dual-homed network elements, either directly or via another additional network element.

In the illustrative embodiment of FIG. 2, as described elsewhere herein, the "second network element" of claim 1 may correspond to network element 15-2, which in this embodiment is directly coupled to a dual-homed network element 16-2 in a set 16 of dual-homed network elements. At element 15-2, a copy of a signal from NE-A is dropped, and the signal continues on to element 15-3. Element 15-3 in this example may be viewed as the "given network element corresponding to said at least one additional network element" and is directly coupled to a second dual-homed network element of the set of dual-homed network elements 16, namely, dual-homed network element 16-1. See the specification at, for example, page 5, lines 11-21.

The claimed arrangements provide numerous advantages, as outlined at page 3, lines 22-27, of the specification, and thereby overcome problems associated with conventional dual-homing arrangements such as those described at page 2, line 14, to page 3, line 4 of the specification.

In formulating the §103(a) rejection, the Examiner acknowledges that the Russ reference fails to disclose the limitations relating to coupling of the recited network elements with respective

elements of a set of dual-homed network elements. See the final Office Action, at pages 2-3. However, the Examiner argues that the missing teachings are found in Van Deventer. Applicant respectfully disagrees. The portions of the Van Deventer reference relied upon by the Examiner, namely, column 3, lines 39-47, and column 7, lines 6-9, simply indicate that the particular type of coupling arrangement shown in FIG. 2 can be applied to multiple central nodes in a dual homing configuration. These teachings fail to meet the particular limitations of claim 1 which recite coupling of particular types of network elements with corresponding elements of a set of dual-homed network elements. The proposed combination thus fails to meet the particular limitations recited in claim 1.

In addition, since Van Deventer discloses a type of conventional dual homing such as that described at page 2, line 9, to page 3, line 4, it is believed that the proposed combination will not exhibit the above-noted advantages of the claimed arrangements, but will instead suffer from the very same problems identified and solved by Applicant.

Claim 1 thus includes one or more limitations which are not taught or suggested by the proposed combination of Russ and Van Deventer. The combined teachings of these references therefore fail to "teach or suggest all the claim limitations" as would be required by a proper §103(a) rejection.

Also, as indicated previously, the Examiner has failed to identify a cogent motivation for combining the references or modifying the reference teachings to reach the claimed invention.

The Federal Circuit has stated that when patentability turns on the question of obviousness, the obviousness determination "must be based on objective evidence of record" and that "this precedent has been reinforced in myriad decisions, and cannot be dispensed with." In re Sang-Su Lee, 277 F.3d 1338, 1343 (Fed. Cir. 2002). Moreover, the Federal Circuit has stated that "conclusory statements" by an examiner fail to adequately address the factual question of motivation, which is material to patentability and cannot be resolved "on subjective belief and unknown authority." Id. at 1343-1344.

There has been no showing in the present §103(a) rejection of objective evidence of record that would motivate one skilled in the art to combine Russ and Van Deventer or to modify their teachings to meet the limitations in question. Instead, the Examiner provides the following statement

at page 3, last paragraph, to page 4, first paragraph, of the final Office Action, with emphasis supplied:

> One skilled in the art would have recognized the second network element is coupled to a first dual-homed network element of a set of dual-homed network elements, and would have applied Van Deventer's dual homing technique in Russ et al.'s preactivation flooding process. Therefore, it would have been obvious to one of ordinary skilled [sic] in the art at the time of the invention, to use Van Deventer's coupling arrangement for coupling optical connections in Russ et al.'s implementation protocol for SHN-based algorithm restoration platform with the motivation being to provide a distributive network in which the technique of dual homing is applied (col. 3, lines 39-40).

The above-quoted statement of obviousness given by the Examiner in the final Office Action is precisely the type of subjective, conclusory statement that the Federal Circuit has indicated provides insufficient support for an obviousness rejection. The relied-upon teachings at column 3, lines 39-40, of Van Deventer simply indicate that "the invention is further applicable in a distributive network in which the technique of dual homing is applied." Further disclosure at column 3, lines 43-46, specify that "[i]n such dual homing network at least one, but preferably all of the network nodes are provided with the coupling arrangement of the invention." Thus, Van Deventer itself teaches to use, in a dual homing network, a particular coupling arrangement that is distinct from that used in the claimed invention. Accordingly, the recited teachings from Van Deventer not only fail to motivate the proposed combination with Russ, they actually teach away from the claimed invention. Moreover, the Van Deventer reference alone clearly discloses a distributive network in which the technique of dual homing is applied, and so such a disclosure would not motivate one skilled in the art to look elsewhere.

Further, even if it is assumed that a proper *prima facie* case has been established, there are particular teachings in one or more of the references which controvert the obviousness argument put forth by the Examiner. For example, the above-noted teachings in Van Deventer relating to a type of conventional dual homing arrangement are believed to teach directly away from the limitations of claim 1. Such a teaching away is believed to constitute strong evidence of non-obviousness.

Applicant therefore respectfully submits that independent claim 1 is allowable over Russ and Van Deventer.

Independent claims 10 and 19 each include limitations similar to those of independent claim 1, and are believed allowable for reasons similar to those identified above with regard to claim 1.

Dependent claims 2-7 and 11-18 are believed allowable for at least the reasons identified above with regard to claim 1.

Claim 8

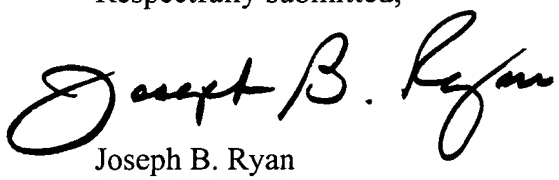
Dependent claim 8 is believed allowable for at least the reasons identified above with regard to claim 1. Moreover, claim 8 further specifies that the second network element of claim 1 is itself an element of a set of dual-homed network elements. The Examiner relies generally on the collective teachings of Russ and Van Deventer, but these teachings fail to disclose or suggest a particular network element that performs the claimed processing of a traffic demand and is also an element of a set of dual-homed network elements. Accordingly, it is believed that the proposed combination of Russ and Van Deventer fails to meet the limitations of claim 8.

Claim 9

Dependent claim 9 is believed allowable for at least the reasons identified above with regard to claim 1. Moreover, claim 9 further specifies that the at least one additional network element of claim 1 is itself an element of a set of dual-homed network elements. The Examiner relies generally on the collective teachings of Russ and Van Deventer, but these teachings fail to disclose or suggest a particular network element that is configured as recited in claim 1 and is also an element of a set of dual-homed network elements. Accordingly, it is believed that the proposed combination of Russ and Van Deventer fails to meet the limitations of claim 9.

In view of the above, Applicant believes that claims 1-19 are in condition for allowance, and respectfully requests the withdrawal of the §103(a) rejection.

Respectfully submitted,



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CLAIMS APPENDIX

1. A method of routing traffic between elements of a network so as to provide protection against network failures, the method comprising the steps of:

routing a given traffic demand from a first network element to a second network element; and

processing the traffic demand in the second network element such that a copy of a signal associated with the demand is at least one of: (i) retained at the second network element, while the signal is routed to at least one additional network element; and (ii) routed to at least one additional network element, while the signal is routed to at least one network element other than the additional network element;

wherein the second network element is coupled to a first dual-homed network element of a set of dual-homed network elements, either directly or via a given network element corresponding to said at least one network element other than the additional network element; and

wherein a given network element corresponding to said at least one additional network element is coupled to a second dual-homed network element of the set of dual-homed network elements, either directly or via another additional network element.

2. The method of claim 1 wherein the first network element comprises a source network element of the traffic demand.

3. The method of claim 1 wherein the second network element comprises an element of a ring-type transport.

4. The method of claim 1 wherein the second network element comprises an element of a mesh-type transport.

5. The method of claim 1 wherein the copy of the signal associated with the demand is generated and retained at the second network element and the signal continues on to another network element.

6. The method of claim 1 wherein a copy of the signal is generated at each of a set of multiple network elements including the second network element.

7. The method of claim 1 wherein the copy of the signal associated with the demand comprises at least a portion of a multicast of the signal generated by the second network element and multicast to at least two other network elements.

8. The method of claim 1 wherein the second network element is an element of a set of dual-homed network elements.

9. The method of claim 1 wherein the at least one additional network element is an element of a set of dual-homed network elements.

10. An apparatus for routing traffic between elements of a network so as to provide protection against network failures, the apparatus comprising:

a given network element coupled to one or more additional network elements and operative to process a traffic demand received from one of the additional network elements such that a copy of a signal associated with the demand is at least one of: (i) retained at the given network element, while the signal is routed to at least one of the additional network elements; and (ii) routed to at least one of the additional network elements, while the signal is routed to at least one network element other than the one of the additional network elements;

wherein the given network element is coupled to a first dual-homed network element of a set of dual-homed network elements, either directly or via another network element corresponding to said at least one network element other than the one of the additional network elements; and

wherein another network element corresponding to said at least one of the additional network elements is coupled to a second dual-homed network element of the set of dual-homed network elements, either directly or via another additional network element.

11. The apparatus of claim 10 wherein the traffic demand is received at the given network element from a source network element of the traffic demand.

12. The apparatus of claim 10 wherein the given network element comprises an element of a ring-type transport.

13. The apparatus of claim 10 wherein the given network element comprises an element of a mesh-type transport.

14. The apparatus of claim 10 wherein the copy of the signal associated with the demand is generated and retained at the given network element and the signal continues on to another network element.

15. The apparatus of claim 10 wherein a copy of the signal is generated at each of a set of multiple network elements including the given network element.

16. The apparatus of claim 10 wherein the copy of the signal associated with the demand comprises at least a portion of a multicast of the signal generated by the given network element and multicast to at least two other network elements.

17. The apparatus of claim 10 wherein the given network element is an element of a set of dual-homed network elements.

18. The apparatus of claim 10 wherein at least one of the additional network elements is an element of a set of dual-homed network elements.

19. An apparatus for routing traffic between elements of a network so as to provide protection against network failures, the apparatus comprising:

a first network element; and

a second network element coupled to the first network element, the first network element routing a given traffic demand to the second network element, the second network element

processing the traffic demand such that a copy of a signal associated with the demand is at least one of: (i) retained at the second network element, while the signal is routed to at least one additional network element; and (ii) routed to at least one additional network element, while the signal is routed to at least one network element other than the additional network element;

wherein the second network element is coupled to a first dual-homed network element of a set of dual-homed network elements, either directly or via a given network element corresponding to said at least one network element other than the additional network element; and

wherein a given network element corresponding to said at least one additional network element is coupled to a second dual-homed network element of the set of dual-homed network elements, either directly or via another additional network element.

EVIDENCE APPENDIX

None

RELATED PROCEEDINGS APPENDIX

None